

Chapter 5 Review

December 7, 2009

$$f(x) = 2x^2 + 1$$

$$g(x) = x + 10$$

- $(f+g)(x)$ $2x^2 + 1 + x + 10$
 $= 2x^2 + x + 11$

$$f(x) = 2x^2 + 1$$

$$g(x) = x + 10$$

$$2x^2 + 1 - x - 10$$

2) $(f-g)(x)$

$$\begin{aligned} & 2x^2 + 1 - (x + 10) \\ &= 2x^2 + 1 - x - 10 \\ &= 2x^2 - x - 9 \end{aligned}$$

$$f(x) = 2x^2 + 1$$

$$g(x) = x + 10$$

3) $(g-f)(x)$

$$x + 10 - (2x^2 + 1)$$

$$x + 10 - 2x^2 - 1$$

$$= -2x^2 + x + 9$$

$$f(x) = 2x^2 + 1$$

$$g(x) = x + 10$$

4) $(fg)(x)$

$$(2x^2 + 1)(x + 10)$$

$$2x^3 + 20x^2 + x + 10$$

$$f(x) = 2x^2 + 1$$

$$g(x) = x + 10$$

5) $(f/g)(x)$

$$\frac{2x^2 + 1}{x + 10} \leftarrow$$

$$x \neq -10$$

$$f(x) = 2x^2 + 1$$

$$g(x) = x + 10$$

6) $(f \circ g)(x)$

$$2(x+10)^2 + 1$$

$$2(x^2 + 20x + 100) + 1$$

$$2x^2 + 40x + 200 + 1$$

$$= 2x^2 + 40x + 201$$

$$(x+10)(x+10)$$

	x	$+10$
x	x^2	$10x$
10	$10x$	100

$$x^2 + 20x + 100$$

$$f(x) = 2x^2 + 1$$

$$g(x) = x + 10$$

7) $(g \circ f)(x)$

$$(2x^2 + 1) + 10$$

$$= 2x^2 + 11$$

Find the inverse of the following functions.

8) $f(x) = 2x - 10$

$$y = 2x - 10$$

$$x = \frac{y + 10}{2}$$

$$x + 10 = 2y$$

$$\frac{x + 10}{2} = y$$

$$y = \frac{x + 10}{2}$$

Find the inverse of the following functions.

9) $f(x) = x^2 + 12$

$$y = x^2 + 12$$

$$x = \sqrt{y - 12}$$

$$x^2 = y - 12$$

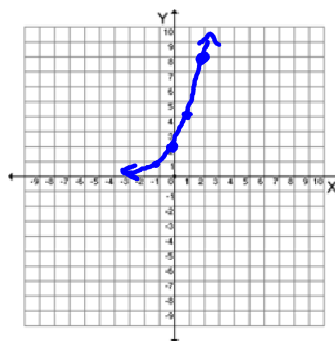
$$\sqrt{x^2 - 12} = \sqrt{y^2}$$

$$y = \pm \sqrt{x - 12}$$

Graph the following exponential function and complete the chart.

x	f(x)
0	2
1	4
2	8
-1	1

$$f(x) = 2(2^x)$$



11) $\log x = 1.5$

$$10^{\log x} = 10^{1.5}$$

$$x = 31.6$$



$$12) \log_3 x = 4$$

$$3^{\log_3 x} = 3^4 \quad (3 \cdot 3 \cdot 3 \cdot 3)$$

$$x = 81$$

$$13) 2\log_4(x+2) + 5 = 12$$

$$\frac{2}{2}\log_4(x+2) = \frac{7}{2}$$

$$\log_4(x+2) = 3.5$$

$$4^{\log_4(x+2)} = 4^{3.5}$$

$$\underline{x+2} = 128$$

$$x = 126$$

$$14) 10^x = 125$$

$$\underline{\log 10^x} = \log 125$$

$$x = \log 125$$

$$x = 2.097$$

$$15) e^{0.1x} = 5.2$$

$$\ln e^{0.1x} = \ln 5.2$$

$$\frac{0.1x}{.1} = \frac{1.65}{.1}$$

$$x \approx 16.5$$

add, subtract, multiply, divide,
composition of functions

inverses

graphing

logarithms & exponents
(solve for x)

p. 464-468